35 USC 112, First Paragraph, Rejections

35 USC 112, first and second paragraph, requirements:

(a) First, regarding the Examiner's assertion that the term "means for" does not find clear support in the description, the original claims at least constitute their own description. MPEP 2163 I and MPEP 2106 V.A.2.

(b) Second, regarding adequate written description under 35 USC 112, first paragraph, software aspects of the invention may be described functionally (MPEP 2106 V.B.1).

The specification and the drawings, for example, page 10, line 3 to page 17, line 15 and Figs. 1-7, reasonably convey to one skilled in the art the limitations of the claimed present invention and explain the operations performed by a computer (MPEP 2163.02, 2163.04, 2106.01 and 2106.02). For example, regarding claim 1 and Fig. 5, conventional compound document programming techniques can be used to create "prepared data," such as the OLE standard, etc., with linked/embedded elements using link information (Fig. 5, boxes 21, 22 and 23). The present invention can create the link information and add the link information to a document using a compound document programming technique to create the "prepared data" with the "linked/embedded input data" (box: link information generating unit 22 and link information appending unit 23). Once the prepared data with the link information is created, upon use of the prepared data, for example, display of the prepared data, the system of the present invention uses conventional programming techniques to access the link information to determine if "linked/embedded input data" in the "prepared data" requires authorization (Fig. 4).

(c) Third, the disclosure of structure corresponding to the means-plus-function limitation is at least implicit in the written description and the drawings because it is clear to those skilled in the art that a computer can be programmed to perform the functions recited in the claims. Page 10, lines 9-24; page 11, lines 3-13 and Figs. 1 and 2. Therefore, all of the claims have corresponding disclosure of a well known structure (i.e., a programmed computer), such that the claims particularly point out and distinctly claim the present invention. MPEP 2181 and MPEP 2106 V.A.2.

(d) Fourth, regarding the enablement requirement under 35 USC 112, first paragraph, the claimed present invention provides a distinguishing feature of "preparing data by linking the input data to/embedding the input data in the data using a compound document programming technique" and "preventing storage of the linked/embedded input data in another storage means" if "said linked/embedded input data has been judged to require authorization for

use. Data with linked/embedded elements can be generated and manipulated using object linking/embedding techniques for creating a compound document. *See* attached dictionary definition of "compound document" and "OLE."

Withdrawal of the rejection of claims under 35 USC 112, first paragraph, is respectfully requested.

35 USC 103 Rejections

(1) "Compound Data": The Examiner maintains that the term "compound data" is overly broad by possibly including any text document with two or more characters. However, this term can have a specific definition in the related field of computers, for example, as defined in a computer science dictionary. Attached herewith is a copy of portions of a dictionary defining "compound data" and "OLE." Microsoft Computer Dictionary, Fourth Edition (1999).

The present invention can protect "input data" that "requires authorization for use" and created by one application when "the input data" is "linked to/embedded" in another data created by the same and/or different applications (e.g., Fig. 10). The independent claims 1, 4, 9, 12, 15, 18, 20, 22 and 23 are amended for clarity and recite, using recitation of amended claim 1 as an example,

> means for storing input data, which can require authorization for use;
>
> means for preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique to generate information of the input data and to append the generated information to the linked/embedded input data
>
> (emphasis added).

Support for the amendments can be found, for example, on page 2, lines 17-20; page 13, line 24 to page 16, line 6; Figs. 2, 5, 4 of the present application

(2) Patentability and Functional Language: The Examiner appears to assert that for system claims, such as all independent claims 1, 4, 9, 12, 15, 18, 20, 22 and 23, the system must be distinguished from the prior art in terms of structure rather than function, relying on MPEP 2114. *See* Interview Summary. Therefore, it appears that the Examiner is not giving any weight to the functional language.

The Examiner should follow the USPTO's Examination Guidelines for Computer Related

Inventions (MPEP 2106, in particular 2106 V); guidelines in interpreting the functional portion of means-plus-function limitations (MPEP 2181); and guidelines for claims to particularly point out and distinctly claim the invention (MPEP 2173.05(g)). Regarding computer related inventions, software aspects of the inventions may be described functionally and must be considered in assessing patentability under 35 USC 102 and 103 (MPEP 2106 V.B.1 and VI regarding functional descriptive material). *See also,* MPEP 2106.IV.B.1(a) and 2(a). In case of computer-related inventions, a system (apparatus) claim is proper when the system via functionality, as claimed, provides a practical application. For example, see MPEP 2106.IV.B.1(a) and 2(a) regarding independent claim 23. Therefore, a computer-related system (apparatus) claim should be analyzed against the prior art for the distinguishing claimed processes performed causing distinguishing functional changes in the computer.

(3) Distinctions of the Claimed Present Invention Over the Prior Art

PRIOR ART

Hasebe #1

Hasebe #1 discloses a data protection system for preventing unauthorized copying of electronic data, such as computer software (Hasebe #1 at abstract, Col. 1, lines 6 - 9). The protected software is provided to the user encrypted on a storage medium such as an optical disk (Col. 1, lines 63 - 65; Col. 2, lines 27 - 29). The electronic key for decrypting the data is stored on the storage medium in encrypted form (Col. 1, line 66 - Col. 2, line 3). The vendor computer supplies encrypted permission information, for decrypting the encrypted electronic data, to the user computer via transmission or to the user in a document (Col. 2, lines 14 - 26). Upon decryption, the unencrypted software is available for execution by the user (Col. 3, lines 37 - 39; Col. 5, line 66 - Col. 6, line 2).

Hasebe #2

Hasebe #2 discloses a system for charging for use of digitized data such as software and for granting permission to use the data (Hasebe #2 at abstract; Col. 1, lines 7 - 9). The supplied data is decrypted for use by a software managing module (Col. 3, lines 46 - 65). Deciphering for subsequent use by the user is permitted only if an available credit balance exists in a charging table (Col. 4, lines 18 - 21). The available balance is subtracted based on the deciphering processing amount or the processing period of time for the ciphered software data (Col. 4, lines 23 - 25). The user can add to the remaining balance total to permit additional use of the data (Col. 4, lines 25 - 29).

Iwayama

Iwayama et al. discloses a system for authorized accessing of encoded electronic data such as computer software (Iwayama et al. at abstract; Col. 2, lines 11 - 15). The data is first stored as encoded data on a storage medium such as a compact disk (Col. 2, lines 30 - 33). The desired portion of encoded data will be decoded when a user inputs the identification information for the preferred data content (Col. 2, lines 61 - 65). When the decoding is completed, the system compares the decoded content identification information with the user-supplied content information (Col. 3, lines 14 - 19). If the two sets of information match, the system will output the selected data portion to the user (Col. 3, lines 19 - 22).

Examiner's Assertions:

The Examiner appears to acknowledge that none of the relied upon references disclose means for forbidding saving input data which requires authorization for use. Page 11 of the Action. The Examiner appears to assert that this feature would be obvious to one of ordinary skill in the art. However, the relied upon references do not suggest a motivation to prevent storage of input data which requires authorization for use (emphasis added). In particular, input data is data input when "preparing data," such as data "linked to/embedded" in a document when creating a compound document using "a compound document programming technique."

The Applicants respectfully assert that the claimed present invention as recited, for example, in claim 1 is not obvious. In contrast to the relied upon references, the present invention as recited in claim 1 provides:

> means for preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique;
>
> and
>
> means for preventing storage of the linked/embedded input data in another storage means to prevent unauthorized use of the linked/embedded input data if the linked/embedded input data is judged to require authorization for use (emphasis added).

In the present invention "prepared data" is created "using a compound document programming technique to generate information of the input data and to append the generated information to the linked/embedded input data." The "prepared data" contains "linked/embedded" objects ("input data") from software applications. In particular, when displaying the "prepared data," the "linked/embedded input data" in the "prepared data" can be

manipulated by the application that created the "linked/embedded input data." *See* page 2, lines 17-20 of the present application. *See* the dictionary definition of "compound document" and "OLE."

In contrast to the relied upon references, the claimed present invention can protect "input data" that "requires authorization for use" and created by one application when "the input data" is "linked to/embedded" in another data created by the same and/or different applications. Fig. 5 shows a system in which conventional programming techniques can be used, such as the Object Linking and Embedding (OLE) compound document standard. For example, according to the present invention, link information can show which data (file) is linked based on the standard techniques of the OLE and then the boxes in Fig. 4 can judge whether the linked data requires authorization. Of course, in the present invention the link information is used to judge whether the linked data in prepared data created according to "a compound document programming technique" requires authorization. Therefore, the present invention can perform the judgment if the link information specifying the linked data is at least specified. However, the present invention can also use information attached to the link information to judge whether the linked data requires authorization. *See* Figs. 2, 5 and 4 and on page 13, line 24 through page 14, line 9 of the present Application. *See also*, page 14, line 10 through page 16, line 6.

Independent claims 1, 4, 9, 18, 22 and 23:

In contrast to the relied upon references, the present invention (as recited in independent claims 1, 4, 9, 18, 22 and 23, using the recitation of claim 1 as an example) provides at least:

> means for preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique;
>
> and
>
> means for preventing storage of the linked/embedded input data in another storage means to prevent unauthorized use of the linked/embedded input data if the linked/embedded input data is judged to require authorization for use (emphasis added).

Independent claims 4 and 9:

In contrast to the relied upon references, the present invention (as recited in independent claims 4 and 9, using the recitation of claim 4 as an example) further provides

> means for preparing data to create prepared data by linking the input data to/embedding the input data in the data using a

compound document programming technique;

means for preventing storage of the linked/embedded input data in another storage means during processing of the linked/embedded input data in the prepared data when said linked/embedded input data has been judged to require authorization for use; and

storage means for storing process information indicating what kind of processing has been performed on the linked/embedded input data during the processing (emphasis added).

Independent claim 9:

In contrast to the relied upon references, the present invention, as recited in independent claim 9, further provides:

means for storing input data, which can require authorization for use;

means for permitting distribution of the input data to data processing means;

means for preparing data to create prepared data by linking the input data to/embedded the input data in the data using a compound document programming technique;

judging means for judging that the linked/embedded input data in the prepared data requires authorization for use;

means for preventing storage of the linked/embedded input data in another storage means during processing of the linked/embedded input data in the prepared data by the data processing means when said linked/embedded input data has been judged to require authorization for use; and

storage means for storing process information indicating what kind of processing has been applied by said data processing means.

Independent claim 12:

In contrast to the relied upon references, the present invention, as recited in independent claim 12, further provides

means for preparing data to create prepared data by linking input data to/embedding the input data in the data using a compound document programming technique to generate information of the input data and to append the generated

information to the prepared data, the input data requiring authorization for use and input from a center permitting use of the input data in exchange for a charge; and

means for utilizing the linked/embedded input data by displaying the prepared data and the linked/embedded input data (emphasis added).

Further, dependent claim 13 recites patentably distinguishing features of its own. The present invention, as recited in dependent claim 13, further provides:

judging means for judging whether there is a license for utilizing the utilized linked/embedded input data in the prepared data; and

means for permitting the utilized linked/embedded input data to be displayed on said display means when judged that there is the license (emphasis added).

Independent claim 15:

In contrast to the relied upon references, the present invention, as recited in independent claim 15, further provides

means for permitting distribution to data processing means input data requiring authorization for use in exchange for a charge;

means for processing the input data, which requires authorization for use;

means for preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique; and

storage means for storing process information indicating what kind of processing has been applied by said processing means to the linked/embedded input data in the prepared data (emphasis added).

Independent claim 20:

In contrast to the relied upon references, the present invention, as recited in independent claim 20, further provides

a processing unit in communication with the storage unit and programmed to process the input data, which is linked to/embedded in prepared data according to a compound document programming technique, to produce differential data by

comparing the processed linked/embedded input data with the linked/embedded input data in the prepared data, and to store the differential data in the storage unit (emphasis added).

Withdrawal of the rejection of claims under 35 USC 103 is respectfully requested.

CONCLUSION

In view of the amendments and remarks presented above, it is respectfully submitted that the application is in condition for allowance, and withdrawal of the rejection of claims 1-18, 20, and 22-23 and allowance of these claims is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Respectfully submitted,
STAAS & HALSEY LLP

Date: 11/19/2001

By: _____
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please **AMEND** claims 1-9, 12-13, 15-16, 18, 20, and 22-23 as follows.
Recitation of all pending claims is provided for reference convenience.

1. (FOUR TIMES AMENDED) A data protection system protecting input data requiring authorization for use against unauthorized use during utilization of the input data, comprising:

means for storing input data, which can require authorization for use;

means for [creating compound] preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique[;

means for generating] to generate information of the input data [linked in the data;

means for creating appended compound data by appending] and to append the generated information to the [compound]prepared data;

means for utilizing the [appended compound] linked/embedded input data by displaying the [appended compound] prepared data[, including displaying] and the linked/embedded [the] input data [linked in the appended compound data];

judging means for judging, using the generated information, whether the linked/embedded input data [linked in the appended compound data] requires authorization for use; and

means for preventing storage of the linked/embedded input data [linked in the appended compound data] in another storage means to prevent unauthorized use of the linked/embedded input data [linked in the appended compound data] if the linked/embedded input data [linked in the appended compound data] is judged to require authorization for use.

2. (FOUR TIMES AMENDED) The data protection system as claimed in claim 1, further comprising:

means for executing a cut and paste function with respect to the linked/embedded input data [linked] in the [appended compound] prepared data; and

means for preventing the cut and paste function to prevent unauthorized use of the linked/embedded input data [linked in the appended compound data] when the linked/embedded input data [linked in the appended compound data] requires authorization for use.

3. (FOUR TIMES AMENDED) The data protection system as claimed in claim 1, wherein said judging means includes means for judging whether the linked/embedded input data [linked] in the [appended compound]prepared data is encrypted that can be decoded by a predetermined decoding key; and

means for determining whether the linked/embedded input data [linked in the appended compound data] requires authorization for use when the linked/embedded input data is encrypted.

4. (FOUR TIMES AMENDED) A data protection system for protecting input data requiring authorization for use against unauthorized use when the input data is processed, comprising:

means for storing input data, which can require authorization for use;

means for [creating compound]preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique;

judging means for judging whether the linked/embedded input data requires authorization for use;

means for preventing storage of the linked/embedded input data in another storage means during processing of the linked/embedded input data in the [compound] prepared data when said linked/embedded input data has been judged to require authorization for use; and

storage means for storing process information indicating what kind of processing has been performed on the linked/embedded input data [in the compound data] during the processing.

5. (THREE TIMES AMENDED) The data protection system as claimed in claim 4, wherein said judging means includes means for judging whether the linked/embedded input data is encrypted that can be decoded by a predetermined decoding key; and

means for determining whether the linked/embedded input data requires authorization for use when the linked/embedded input data is encrypted.

6. (FOUR TIMES AMENDED) The data protection system as claimed in claim 4, wherein the process information is differential data indicating a difference between the linked/embedded input data and the linked/embedded input data after the processing.

7. (THREE TIMES AMENDED) The data protection system as claimed in claim 4, further comprising:

means for displaying the linked/embedded input data and the process information as added to the linked/embedded input data.

8. (THREE TIMES AMENDED) The data protection system as claimed in claim 4, wherein said storage means for storing process information includes means for adding information specifying the linked/embedded input data to the process information; and

means for storing the added information.

9. (FOUR TIMES AMENDED) A data protection system for protecting input data requiring authorization for use against unauthorized use [when the input data is distributed to data processing means from a center permitting use of the input data, and the distributed input data is processed in said data processing means], comprising:

means for storing input data, which can require authorization for use;[, and]

means for permitting distribution of the input data to data processing means;

means for [creating compound]preparing data to create prepared data by linking the input data to/embedded the input data in the data using a compound document programming technique;

judging means for judging that the linked/embedded input data in the [compound] prepared data requires authorization for use;

means for preventing storage of the linked/embedded input data in another storage means during processing of the linked/embedded input data in the [compound] prepared data by the data processing means when said linked/embedded input data has been judged to require authorization for use; and

storage means for storing process information indicating what kind of processing has been applied by said data processing means.

10. (as THREE TIMES AMENDED) The data protection system as claimed in claim 9, further comprising:

means for distributing the process information from said center as input data requiring authorization for use.

11. (as THREE TIMES AMENDED) The data protection system as claimed in claim 9, further comprising:

means for distributing data prepared by adding the process information to the input data from said center as input data requiring authorization for use.

12. (FOUR TIMES AMENDED) A data preparation device [wherein input data requiring authorization for use is input from a center which permits use of the input data in exchange for a charge], comprising:

means for [creating compound] preparing data to create prepared data by linking input data to/embedding the input data in the data using a compound document programming technique to generate information of the input data and to append the generated information to the prepared data, the input data requiring [, which requires] authorization for use and input from a center permitting use of the input data in exchange for a charge[, in data]; and

[means for generating information of the input data which is linked in the compound data;

means for appending the generated information to the compound data;]

means for utilizing the [compound] linked/embedded input data [with the appended generated information] by displaying the [compound] prepared data[, including displaying] and the linked/embedded input data.

13. (FOUR TIMES AMENDED) The data preparation device as claimed in claim 12, further comprising:

judging means for judging whether there is a license for utilizing the utilized linked/embedded input data in the [compound]prepared data; and

means for permitting the utilized linked/embedded input data to be displayed on said display means when judged that there is the license.

14. (as ONCE AMENDED) The data preparation device as claimed in claim 13, wherein the balance of the charge is used to pay for the license.

15. (FOUR TIMES AMENDED) A data processing device [wherein input data requiring authorization for use is input from a center which permits use of the input data in exchange for a charge, and processing is applied to the input data], comprising:

means for permitting distribution to data processing means input data requiring authorization for use in exchange for a charge;

means for processing the input data, which requires authorization for use;[, and]

means for [creating compound]preparing data to create prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique; and

storage means for storing process information indicating what kind of processing has been applied by said processing means to the linked/embedded input data in the [compound] prepared data.

16. (THREE TIMES AMENDED) The data processing device as claimed in claim 15, further comprising:

judging means for judging whether there is a license for utilizing the linked/embedded input data in the [compound]prepared data; and

means for permitting the processing of the linked/embedded input data when judged that there is the license.

17. (as ONCE AMENDED) The data processing device as claimed in claim 16, wherein the balance of the charge is used to pay for the license.

18. (THREE TIMES AMENDED) A data protection system for protecting input data requiring authorization for use against unauthorized use when the input data is processed, comprising:

an input unit inputting input data, which requires authorization for use;

a processing unit in communication with the input unit and applying processing to the input data, [as] which is linked to/embedded in prepared [linked in a compound] data [in which the input data is linked to data, to produce generated data] according to a compound document programming technique; and

a forbidding unit preventing storage of the [generated data, which includes] the linked/embedded input data[, as being processed, in the compound data,] during the processing of the linked/embedded input data.

20. (FOUR TIMES AMENDED) A data processing device, comprising:

a storage unit storing input data, which requires authorization for use;

a processing unit in communication with the storage unit and programmed to [produce generated data by applying processing to]process the input data, [as] which is linked to/embedded in [compound] prepared data according to a compound document programming technique[in which the input data is linked to data from the processing], to produce differential data by comparing the [generated] processed linked/embedded input data with the linked/embedded input data in the prepared data, and to store the differential data in the storage unit.

22. (TWICE AMENDED) A system protecting input data requiring authorization for use against unauthorized use during utilization of the input data requiring authorization for use, comprising:

a storage unit storing input data, which can require authorization for use;

a preparation unit in communication with the storage unit and preparing data to create [creating compound]prepared data by linking the input data to/embedding the input data in the data using a compound document programming technique[;

a generating unit in communication with the preparation unit and generating] to generate information of the input data [linked in the data;

an appending unit in communication with the generating unit and appending] and to append the generated information to the [compound]prepared data;

a data display processing unit in communication with the preparation unit and utilizing the [compound]prepared data [with the appended generated information] by displaying the [compound]prepared data including displaying the linked/embedded input data [in the compound data];

a judging unit in communication with the data display processing unit and using the generated information to judge whether the linked/embedded input data requires authorization for use; and

a control unit in communication with the judging unit and preventing storage of the linked/embedded input data in another storage unit to prevent unauthorized use of the linked/embedded input data if the linked/embedded input data is judged to require authorization for use.

23. (ONCE AMENDED) A system protecting input data against unauthorized use during

utilization of the input data, comprising:

a processor[,]programmed to create a compound data [by linking] with input data using a compound document standard, [which requires authorization for use, in data, to append to the compound data information of the input data,] to display the compound data, including the input data, and to prevent storage of the input data to prevent unauthorized use of the input data in the compound data upon determining, using [the] information of the input data, that the input data requires [use] authorization for use.

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on a PC's CPU where peripherals, such as printers, scanners, and external modems, are plugged in. See the illustration. *See also* COM (definition 1), input/output port, serial port.

COM port.

composite display \kəm-poz´it di-splā`\ *n.* A display, characteristic of television monitors and some computer monitors, that is capable of extracting an image from a composite signal (also called an *NTSC signal*). A composite display signal carries on one wire not only the coded information required to form an image on the screen but also the pulses needed to synchronize horizontal and vertical scanning as the electron beam sweeps back and forth across the screen. Composite displays can be either monochrome or color. A composite color signal combines the three primary video colors (red, green, and blue) in a color burst component that determines the shade of color displayed on the screen. Composite color monitors are less readable than either monochrome monitors or the RGB color monitors that use separate signals (and wires) for the red, green, and blue components of the image. *See also* color burst, color monitor, monochrome display, NTSC, RGB monitor.

composite key \kəm-poz´it kē`\ *n.* A key whose definition consists of two or more fields in a file, columns in a table, or attributes in a relation.

composite video display \kəm-poz`it vid´ē-ō di-splā`\ *n.* A display that receives all encoded video information (including color, horizontal synchronization, and vertical synchronization) in one signal. A composite video signal under NTSC (National Television System Committee) standards is generally required for television sets and videotape recorders. *See also* NTSC. *Compare* RGB monitor.

compound statement \kom`pound stāt´mənt\ *n.* A single instruction composed of two or more individual instructions.

compress[1] \kəm-pres´\ *n.* A proprietary UNIX utility for reducing the size of data files. Files compressed with this utility have the extension .Z added to their names.

compress[2] \kəm-pres´\ *vb.* To reduce the size of a set of data, such as a file or a communications message, so that it can be stored in less space or transmitted with less bandwidth. Data can be compressed by removing repeated patterns of bits and replacing them with some form of summary that takes up less space; restoring the repeated patterns decompresses the data. Lossless compression methods must be used for text, code, and numeric data files; lossy compression may be used for video and sound files. *See also* lossless compression, lossy compression.

compressed digital video \kəm-presd` dij`i-təl vid´ē-ō\ *n. See* CDV (definition 1).

compressed disk \kəm-presd` disk´\ *n.* A hard disk or floppy disk whose apparent capacity to hold data has been increased through the use of a compression utility, such as Stacker or Double Space. *See also* data compression.

compressed drive \kəm-presd` drīv´\ *n.* A hard disk whose apparent capacity has been increased through the use of a compression utility, such as Stacker or Double Space. *See also* compressed disk, data compression.

compressed file \kəm-presd` fīl´\ *n.* A file whose contents have been compressed by a special utility program so that it occupies less space on a disk or other storage device than in its uncompressed (normal) state. *See also* installation program, LHARC, PKUNZIP, PKZIP, utility program.

Compressed SLIP \kəm-presd` slip´, S-L-I-P´\ *n.* Short for **Compressed Serial Line Internet Protocol**. A version of SLIP using compressed Internet address information, thereby making the protocol faster than SLIP. *Acronym:* CSLIP (C´slip, C`S-L-I-P´). *See also* SLIP.

compression \kəm-presh´ən`\ *n. See* data compression.

compressor \kəm-pres´ər`\ *n.* A device that limits some aspect of a transmitted signal, such as volume, in order to increase efficiency.

CompuServe \kom´pyo͞o-sərv`\ *n.* An online information service that provides information and communications capabilities, including Internet access. It is primarily known for its technical

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ɔ's complement.

nductor *n. See*

ɔlean logic, an
result from that
he same data. For

example, if A is true, NOT A (its complement) is false. *See also* Boolean algebra.

completeness check *n.* A survey to determine that all data required in a record is present. *Compare* consistency check.

complex instruction set computing *n. See* CISC.

complex number *n.* A number of the form $a + bi$, where a and b are real numbers and i is the square root of -1, called the imaginary unit. Complex numbers can be plotted as points on a two-dimensional plane called the complex plane. The a number is plotted along the plane's horizontal axis (the real axis), and the b number is plotted along the vertical axis (the imaginary axis). *Compare* real number.

comp. newsgroups *n.* Usenet newsgroups that are part of the comp. hierarchy and have the prefix comp. These newsgroups are devoted to discussions of computer hardware, software, and other aspects of computer science. Comp. newsgroups are one of the seven original Usenet newsgroup hierarchies. The other six are misc., news., rec., sci., soc., and talk. *See also* newsgroup, traditional newsgroup hierarchy, Usenet.

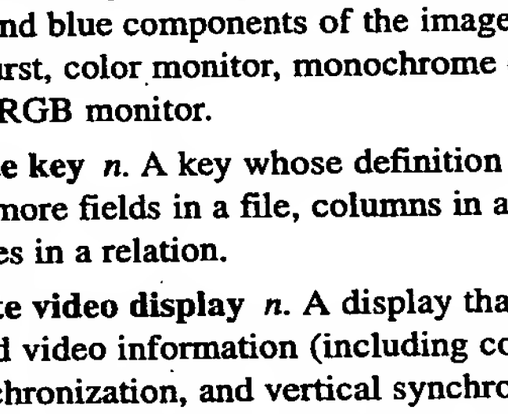
component *n.* **1.** A discrete part of a larger system or structure. **2.** An individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs. *See also* compile, component software, link (definition 1), program, routine.

Component Object Model *n. See* COM (definition 2).

component software *n.* Modular software routines, or components, that can be combined with other components to form an overall program. A programmer can use and reuse an existing component and not have to understand its inner workings, just how to have another program or component call it and pass data to and from it. *Also called* componentware. *See also* component, program, routine.

componentware *n. See* component software.

COM port or **comm port** \kom´ pōrt\ *n.* Short for **com**munications **port**, the logical address assigned by MS-DOS (versions 3.3 and later) and Microsoft Windows (including Windows 9x and Windows NT) to each of the four serial ports on an IBM Personal Computer or a PC compatible. COM ports also have come to be known as the actual serial ports on a PC's CPU where peripherals, such as printers, scanners, and external modems, are plugged in. See the illustration. *See also* COM (definition 1), input/output port, serial port.



COM port.

composite display *n.* A display, characteristic of television monitors and some computer monitors, that is capable of extracting an image from a composite signal (also called an *NTSC signal*). A composite display signal carries on one wire not only the coded information required to form an image on the screen but also the pulses needed to synchronize horizontal and vertical scanning as the electron beam sweeps back and forth across the screen. Composite displays can be either monochrome or color. A composite color signal combines the three primary video colors (red, green, and blue) in a color burst component that determines the shade of color displayed on the screen. Composite color monitors are less readable than either monochrome monitors or the RGB color monitors that use separate signals (and wires) for the red, green, and blue components of the image. *See also* color burst, color monitor, monochrome display, NTSC, RGB monitor.

composite key *n.* A key whose definition consists of two or more fields in a file, columns in a table, or attributes in a relation.

composite video display *n.* A display that receives all encoded video information (including color, horizontal synchronization, and vertical synchronization) in one signal. A composite video signal under NTSC (National Television System Committee) standards is generally required for television sets and videotape recorders. *See also* NTSC. *Compare* RGB monitor.

compound document *n.* A document that contains different types of information, each type created with a different application; for example, a report containing both charts (created with a spreadsheet) and text (created with a word processor) is a compound document. Although a compound document is visually a single, seamless unit, it is actually formed of discrete

objects (blocks of information) that are created in their own applications. These objects can either be physically *embedded* in the destination document, or they can be *linked* to it while remaining in the originating file. Both embedded and linked objects can be edited. Linked objects, however, can be updated to reflect changes made to the source file. *See also* ActiveX, OLE, OpenDoc.

compound statement *n.* A single instruction composed of two or more individual instructions.

compress[1] *n.* A proprietary UNIX utility for reducing the size of data files. Files compressed with this utility have the extension .Z added to their names.

compress[2] *vb.* To reduce the size of a set of data, such as a file or a communications message, so that it can be stored in less space or transmitted with less bandwidth. Data can be compressed by removing repeated patterns of bits and replacing them with some form of summary that takes up less space; restoring the repeated patterns decompresses the data. Lossless compression methods must be used for text, code, and numeric data files; lossy compression may be used for video and sound files. *See also* lossless compression, lossy compression.

compressed digital video *n. See* CDV (definition 1).

compressed disk *n.* A hard disk or floppy disk whose apparent capacity to hold data has been increased through the use of a compression utility, such as Stacker or Double Space. *See also* data compression.

compressed drive *n.* A hard disk whose apparent capacity has been increased through the use of a compression utility, such as Stacker or Double Space. *See also* compressed disk, data compression.

compressed file *n.* A file whose contents have been compressed by a special utility program so that it occupies less space on a disk or other storage device than in its uncompressed (normal) state. *See also* installation program, LHARC, PKUNZIP, PKZIP, utility program.

Compressed SLIP \kəm-presd` slip`\ *n.* Short for **Compressed** Serial Line Internet Protocol. A version of SLIP using compressed Internet address information, thereby making the protocol faster than SLIP. *Acronym:* CSLIP. *See also* SLIP.

compression *n. See* data compression.

compressor *n.* A device that limits some aspect of a transmitted signal, such as volume, in order to increase efficiency.

CompuServe *n.* An online information service that is a subsidiary of America Online. CompuServe provides information and communications capabilities, including Internet access. It is primarily known for its technical support forums for commercial hardware and software products and for being one of the first large commercial online services. CompuServe also operates various private network services.

computation-bound *adj.* Of, pertaining to, or characteristic of a situation in which the performance of a computer is limited by the number of arithmetic operations the microprocessor must perform. When a system is computation-bound, the microprocessor is overloaded with calculations. *Also called* CPU-bound.

compute *vb.* **1.** To perform calculations. **2.** To use a computer or cause it to do work.

computer *n.* Any device capable of processing information to produce a desired result. No matter how large or small they are, computers typically perform their work in three well-defined steps: (1) accepting input, (2) processing the input according to predefined rules (programs), and (3) producing output. There are several ways to categorize computers, including class (ranging from microcomputers to supercomputers), generation (first through fifth generation), and mode of processing (analog versus digital). See the table. *See also* analog, digital (definition 2), integrated circuit, large-scale integration, very-large-scale integration.

computer-aided design *n. See* CAD.

computer-aided design and drafting *n. See* CADD.

computer-aided design/computer-aided manufacturing *n. See* CAD/CAM.

computer-aided engineering *n. See* CAE.

computer-aided instruction *n. See* CAI.

computer-aided learning *n. See* CAI.

computer-aided manufacturing *n. See* CAM (definition 1).

computer-aided testing *n. See* CAT (definition 1).

Computer and Business Equipment Manufacturers Association *n. See* CBEMA.

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ODI *n.* Acronym for Open Data-link Interface. A specification developed by Novell to enable a network interface card (NIC) to support multiple protocols, such as TCP/IP and IPX/SPX. ODI also simplifies development of device drivers by eliminating concern about the particular protocol to be used in transferring information over the network. ODI is comparable in some ways to the Network Driver Interface Specification, or NDIS. *See also* NDIS, network adapter.

ODMA *n.* Acronym for Open Document Management API. A specification for a standard application program interface that enables desktop applications, such as Microsoft Word, to interact seamlessly with specialized document management systems (DMS) installed on network servers. The ODMA specification is the property of the Association for Information & Image Management (AIIM). *See also* API, document management system.

OEM *n. See* original equipment manufacturer.

OFC *n. See* Open Financial Connectivity.

office automation *n.* The use of electronic and communications devices, such as computers, modems, and fax machines and any associated software, to perform office functions mechanically rather than manually.

offline *adj.* **1.** In reference to a computing device or a program, unable to communicate with or be controlled by a computer. *Compare* online (definition 1). **2.** In reference to one or more computers, being disconnected from a network. *Compare* online (definition 2). **3.** Colloquially, a reference to moving a discussion between interested parties to a later, more appropriate time. For example, "We can talk about this offline. Let's get back on topic now."

offline navigator *n.* Software designed to download e-mail, Web pages, or newsgroup articles or postings from other online forums and save them locally to a disk, where they can be browsed without the user paying the cost of idle time while being connected to the Internet or an online information service. *Also called* offline reader.

offline reader *n. See* offline navigator.

offline storage *n.* A storage resource, such as a disk, that is not currently available to the system.

offload *vb.* To assume part of the processing demand from another device. For example, some LAN-attached gateways can offload TCP/IP processing from the host machine, thereby freeing up significant processing capacity in the CPU. *See also* central processing unit, gateway, host, TCP/IP.

offset *n.* In relative addressing methods, a number that tells how far from a starting point a particular item is located. *See also* relative address.

off-the-shelf *adj.* Ready-to-use; packaged. The term can refer to hardware or software.

ohm *n.* The unit of measure for electrical resistance. A resistance of 1 ohm will pass 1 ampere of current when a voltage of 1 volt is applied.

OLAP \ō'lap\ *n. See* OLAP database.

OLAP database *n.* Short for online analytical processing database. A relational database system capable of handling queries more complex than those handled by standard relational databases, through multidimensional access to data (viewing the data by several different criteria), intensive calculation capability, and specialized indexing techniques. *See also* database, query (definition 1), relational database.

OLE \ō-lā'\ *n.* Acronym for object linking and embedding. A technology for transferring and sharing information among applications. When an object, such as an image file created with a paint program, is linked to a compound document, such as a spreadsheet or a document created with a word processing program, the document contains only a reference to the object; any changes made to the contents of a linked object will be seen in the compound document. When an object is embedded in a compound document, the document contains a copy of the object; any changes made to the contents of the original object will not be seen in the compound document unless the embedded object is updated.

OLTP *n.* Acronym for online transaction processing. A system for processing transactions as soon as the computer receives them and updating master files immediately in a database management system. OLTP is useful in financial record keeping and inventory tracking. *See also* database management system, transaction processing. *Compare* batch processing (definition 3).

OM-1 *n. See* OpenMPEG Consortium.

OMA *n.* Acronym for Object Management Architecture. A definition developed by the Object Management Group (OMG) for object-oriented distributed